

STUDIES ON THE CHINESE COLEOPHORIDAE (LEPIDOPTERA): THE *COLEOPHORA FOLLICULARIS* GROUP, WITH DESCRIPTIONS OF THREE NEW SPECIES*

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Abstract Five species of Coleophoridae from China are reported in this paper. Among them, three species *Coleophora jaculatoria* sp. nov., *C. quadrifurca* sp. nov. and *C. yuzhongensis* sp. nov. are described as new to science, and two species *C. frankii* Schmidt and *C. pseudociconiella* Toll are recorded for the first time from this country.

Key words Lepidoptera, Coleophoridae, *Coleophora*, new species, China

Over twenty species of the *Coleophora follicularis* group have been reported from the Palaearctic Region^[1-3,5-15], but no species has ever been recorded from China^[4]. The present paper reports five species of the group for the first time from the country, with three described as new to science. The genitalia of the new species are illustrated. A key to the Chinese species of the *Coleophora follicularis* group is given. The type specimens are kept in the Department of Biology, Nankai University, Tianjin, China.

Key to the species of *Coleophora follicularis* group from China

1. Wing expanse more than 13.0 mm 2
Wing expanse less than 10.0 mm
 2. Forewing with distinct streaks along main veins; male genitalia: transtilla narrow, with membranous edge; juxtal rods acute, strongly sclerotized; four cornuti present *jaculatoria* sp. nov.
Forewing without distinct markings 3
 3. Transtilla short, distal portion very narrow; juxtal rods without process, cornutus long
..... *pseudociconiella* Toll
Transtilla long, distal portion expanded; a large triangular process near median portion of right juxtal rod, cornutus short *yuzhongensis* sp. nov.
4. Flagellum of antenna greyish white in male; distal portion of transtilla expanded, nearly round; dorsal process of sacculus basally toothed, apex of ventral process subtriangular; juxtal rods with many small teeth, apical portion divided into four parts *quadrifurca* sp. nov.
Flagellum of antenna annulated with grey and brown alternately in male; distal portion of transtilla extremely expanded, nearly elloptical; dorsal process of sacculus without tooth, apex of ventral process rounded; middle of

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juxtal rods with large, heavily sclerotized process at middle, apical portion somewhat blunt
 *frankii* Schmidt

***Coleophora jaculatoria* Li et Zheng, sp. nov.** (Figs. 1~3)

Wing expanse: Male 13.5 mm. Head greyish white. Postocular scales pale brown. Labial palpus white, scattered with brown scales; second segment longer than diameter of compound eye, outer surface with brown stripe, apex with ventral tuft; third segment short, length about 1/3 of second. Scales of haustellum white. Antenna greyish white. Thorax and tegula pale brown. Forewing: upper surface ochreous brown, streaked with white along main veins; ventral surface uniformly brown; terminal cilia ochreous brown, tornal cilia greyish brown. Hindwing: both surface brown, cilia grey. Fore and mid legs with femora brown, tibiae greyish white. Hind leg white, outer surface of tibia with a long brown, streak. Abdomen (Fig. 3): setal patches of third tergum elongate, narrow, six times as long as wide, with about 30 spiniform setae.

Male genitalia (Figs. 1~2): Gnathos oval, ventral base broad, with four bristles. Tegumen short and broad, median portion narrowed, anterior margin nearly straight; pedunculi slightly longer than tegumen, inner margin straight, outer margin arched. Transtilla narrow, with membranous edge. Valva narrow, both margins mostly parallel, apex rounded; basal 1/3 of costa strongly convex. Valvula broad, rounded, with setae. Sacculus broad, about twice width of valva, ventral margin narrow, sclerotized, as long as costa, outer margin broad, sclerotized, S-shaped; basal portion of dorsal process stout, distal portion digitate; ventral process short and broad, nearly square. Juxtal rods elongate, gently arched, sclerotized, distal portion acute, strongly sclerotized, right rod shorter than left; annulus narrow; cornuti four, first two long, slender, others short; outer sheath shorter than juxtal rods, lamina short, indistinct; appendix about as long as outer sheath, with two loose coils.

Female: Unknown.

Holotype ♂, Houzhenzi (33.8°N, 107.8°E), Zhouzhi, Shaanxi Province, alt. 1750 m, July 20, 1987, leg. Li Houhun, genitalia slide no. L96102.

Diagnosis: This new species is similar to *Coleophora follicularis* (Vallot), but can be differentiated from it by: the forewing ochreous brown; distal portion of juxtal rods acute, strongly sclerotized in the male genitalia.

***Coleophora frankii* Schmidt, 1887** New Record to China

Coleophora frankii Schmidt, 1887, Correspondenz-Blatt d. naturw. Ver., 40 (7~9): 160.

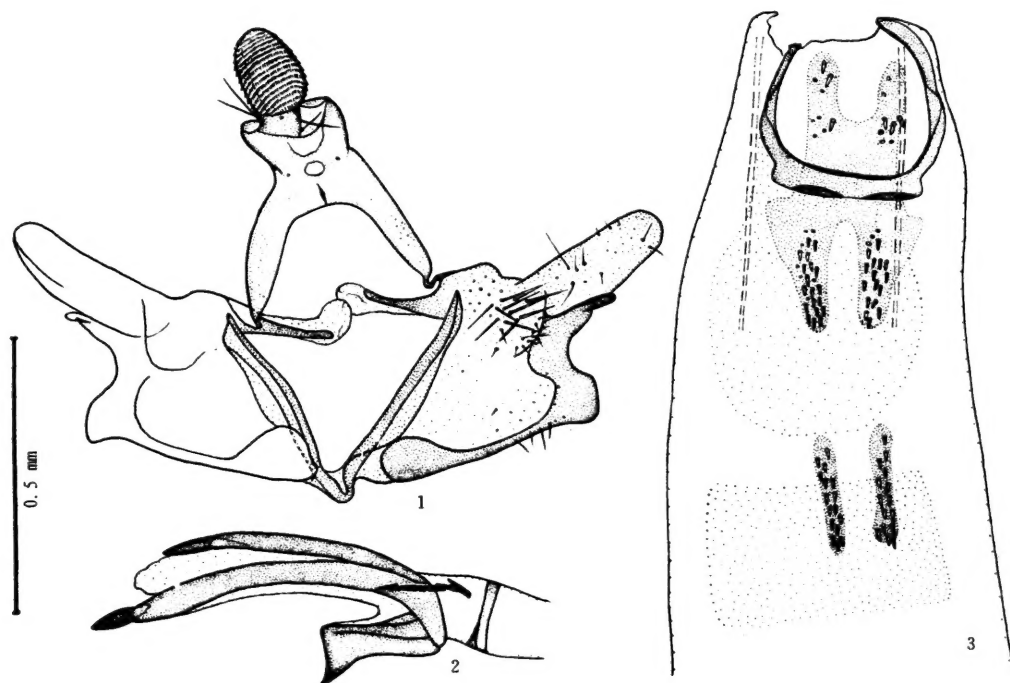
Material examined: 1 ♂, Gongliu (43.4°N, 82.2°E), Xinjiang Uygur Autonomous Region, alt. 1500m, July 29, 1994, leg. Li Houhun and Qin Hongyan.

Distribution: China (Xinjiang), Austria, Czech, Hungary, Yugoslavia, Germany, Italy.

***Coleophora pseudociconiella* Toll, 1952** New Record to China

Coleophora pseudociconiella Toll, 1952, Z. wien. ent. Gas., 37: 163.

Material examined: 1 ♂, Tacheng (27.6°N, 99.4°E), Xinjiang Uygur Autonomous Re-



Figs. 1~3 矛尖脉鞘蛾 *Coleophora jaculatoria* Li et Zheng, sp. nov.

1. Male genitalia (雄性外生殖器); 2. phallus complex (阳茎复合体); 3. abdomen (腹部) (slide no. 玻片号 L96102)

gion, Aug. 9, 1990, leg. Li Jinfu.

Distribution: China (Xinjiang), Austria, Czech, Turkey, Italy.

***Coleophora quadrifurca* Li et Zheng, sp. nov. (Figs. 4~7)**

Wing expanse: Male and female 8.5~9.5 mm. Head brown, lateral sides of vertex greyish white. Postocular scales brown, ventral margin of compound eye with white scales. Labial palpus white, second segment about 1.5 times as long as diameter of compound eye, inner surface scattered with ochreous brown scales, outer surface with wide, oblique ochreous brown streak, apex slightly tufter; third segment about half length of second, ventral margin ochreous brown. Scales of haustellum white. Antenna: scape white to pale ochreous; flagellum white, sometimes slightly suffused with ochreous. Thorax ochreous brown, mixed with white. Tegula greyish white, more or less with ochreous brown scales at base. Forewing: upper surface ochreous brown, with many white scales forming indistinct streaks along main veins; ventral surface brown; cilia greyish white. Hindwing: upper surface and cilia greyish white; ventral surface pale brown. Inner surface of fore leg and mid femur brown, outer surface greyish white. Mid tibia white outer surface with long, brown streak. Hind leg white, tibia with hairs and a long brown streak. Abdomen (Fig. 7): setal patches of third tergum narrow, elongate, 3~5 times as long as wide, with 31~46 spiniform

setae.

Male genitalia (Figs. 4~5): Gnathos oval, basal arms narrow, same length as gnathos. Tegumen short, trapezoid, anterior margin slightly protruding at middle, caudal margin gently convex; pedunculi narrow, about three times length of tegumen, lateral edges parallel. Basal 3/5 of transtilla very narrow, apical 2/5 inflated, nearly rounded. Valva broad, apex rounded; basal 1/3 of costa concaved. Valvula broad, subtriangular, longer than width of valva, base beyond 3/4 of costa, apex rounded, outer margin slightly incurved, with setae. Sacculus longer than costa, ventral margin gently arched; dorsal process long, slender, incurved, distal portion slightly dilated, apex rounded, nearly reaching costa; a small, triangular process attached at base of dorsal process; ventral process large, short and broad, bluntly subtriangular, with short setae. Juxtal rods arched, with many short thorns, left rod equal to right in length, distal 1/4 to 1/3 divided into two parts: one broadly tipped and another slender; annulus distinct, outer sheath shorter than juxtal rods, lamina indistinct; cornutus stout.

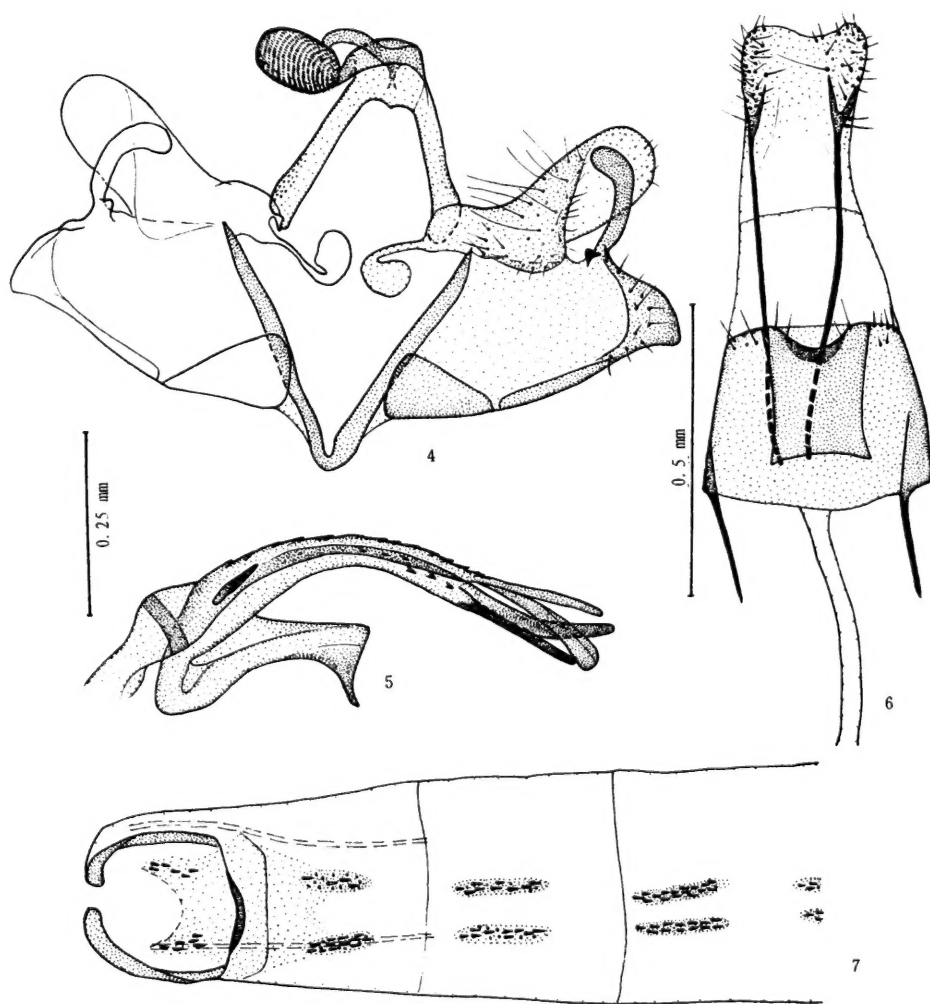
Female genitalia (Fig. 6): Papillae anales broad, densely with short setae. Posterior apophyses as long as three times of anterior apophyses, anterior apophyses thin. Sterigma trapezoid, anterior and lateral margins gently convex; caudal margin with short setae, median 1/3 deeply concaved. Ostium bursae about 1/3 width of sterigma, concaved, with sclerotized edge; colliculum rectangular, nearly as wide as 1/2 of sterigma, about 3/4 length of sterigma, weakly sclerotized, anterior and lateral margins somewhat concaved. Ductus bursae thin, straight, shorter than three times of sterigma, membranous, without spinulate section. Corpus bursae elongately elliptical, about twice as long as sterigma, signum absent.

Holotype ♂, Yangling (34.2°N, 108.0°E), Shaanxi Province, alt. 450 m, May 26, 1985, leg. Li Houhun, genitalia slide no. L96235. Paratypes: 1 ♂, May 1, 1985, same date as holotype, 2 ♂♂, 1 ♀, Chengcheng (35.1°N, 109.9°E), Shaanxi Province, alt. 1 000 m, July 30, 1986 and Aug. 9, 1993, leg. Li Houhun.

Diagnosis: The new species resembles *Coleophora trochilella* (Duponchel), but can be separated from it by: forewing markings indistinct; juxtal rods with many short thorns, distal portion divided in the male genitalia; spinulate section of ductus bursae and signum absent in the female genitalia.

***Coleophora yuzhongensis* Li et Zheng, sp. nov.** (Figs. 8~10)

Wing expanse: Male 14.5 mm. Head greyish white. Postocular scales light brown. Labial palpus white, outer surface mixed with many brown scales; second segment shorter than twice of diameter of compound eye, apex without tuft; third segment as long as second. Scales of haustellum white. Antenna: scape greyish white, somewhat ochreous; flagellum annulated with greyish white and pale brown alternately. Thorax greyish white. Tegula with basal half ochreous brown, apical half greyish white. Forewing: costa straight; upper surface yellowish white, scattered with pale ochreous scales, almost forming indistinct straks, ventral surface greyish brown; cilia grey.



Figs. 4~7 四叉脉鞘蛾 *Coleophora quadrifurca* Li et Zheng, sp. nov.

4. Male genitalia (雄性外生殖器); 5. phallus complex (阳茎复合体); 6. female genitalia (雌性外生殖器);
7. abdomen (腹部) (slide numbers 玻片号: 4~5, 7. L96235; 6. L96124)

Hindwing: both surfaces and cilia grey. Fore and mid legs brown, mixed with greyish white scales. Hind leg white, outer surface of tibia with a long, ochreous brown steak. Abdomen (Fig. 10): setal patches of third tergum narrow, elongate, with 46 spiniform setae.

Male genitalia (Figs. 8~9): Gnathos narrow, elliptical, basal arms short, with several setae. Tegumen rectangular, slightly narrowed at middle, anterior and caudal margins incurved; pedunculi longer than tegumen, narrow, median portion gradually widened. Transtilla narrow, upwardly curved, apical portion expanded, apex subtriangular. Valva broad, apex rounded, with

short setae; costa concaved at basal $2/5$. Valvula broad and short, as long as width of valva, base longer than $1/2$ of costa, densely setose. Sacculus longer than costa, ventral margin equal to costa in length, distally with setae; dorsal process long, curved, distal portion slightly dilated, apex reaching costa; ventral process broad, about half length of dorsal process, apex greatly sclerotized. Juxtal rods equal in length; dorsal margin sclerotized, narrow, arched, left rod with a large triangular process at middle; annulus broad; outer sheath narrow, shorter than juxtal rods, lamina indistinct; cornutus slender, distal half acicular, ventral margin of basal half irregular.



Figs. 8~10 榆中脉鞘蛾 *Coleophora yuzhongensis* Li et Zheng, sp. nov.

8. Male genitalia (雄性外生殖器); 9. phallus complex (阳茎复合体); 10. abdomen (腹部) (slide no. 玻片号 L96212)

Female: Unknown.

Holotype ♂, Yuzhong (35.8°N , 104.0°E), Gansu Province, alt. 2 120 m, July 30, 1993, leg. Li Houhun, genitalia slide no. L96212.

Diagnosis: This species is close to *Coleophora granulatella* Zeller and *Coleophora cinclella* Baldizzone *et* Oku, but differs from them by: the transtilla expanded distally and the right juxtal rod with a large triangular process medially in the male genitalia.

References (参 考 文 献)

- 1 Baldizzone G. Contributions à la connaissance des Coleophoridae. Ⅲ. Les espèces de Coleophoridae décrites par Pierre Chrétien. Alexanor, 1979, 11 (3): 111~130

- 2 Baldizzone G. Contributions à la connaissance des Coleophoridae. XXX. Nouvelles espèces du genre *Coleophora* Hübner de France, Espagne, Maroc et Îles Canaries (Coleophoridae). Nota lepid., 1982, 5 (2~3): 57~76
- 3 Baldizzone G. Contributions à la connaissance des Coleophoridae. XXXI. Deux nouvelles espèces de Hongrie: *Coleophora magyarica* n. sp. et *C. remizella* n. sp. les ♀♀ de *C. frankii* Schmid et de *C. hungariae* Gozmány. Nota lepid., 1983, 6 (2~3): 69~80
- 4 Baldizzone G. A taxonomic review of the Coleophoridae (Lepidoptera) of China. Tijdschrift voor Entomologie, 1989, 132: 199~240
- 5 Baldizzone G. Contribuzioni alla conoscenza dei Coleophoridae. LXXVII. *Coleophora settarii* Wocke, 1877 in Piemonte (Lepidoptera). Riv. Piem. St. Nat., 1992, 13: 29~36
- 6 Baldizzone G. Contribuzioni alla conoscenza dei Coleophoridae. LXXV. Coleophoridae dell' Area Irano-Anatolica e regioni limitrofe (Lepidoptera). Memorie Associazione Naturelistica Piemontese, 1994, 3: 1~424
- 7 Baldizzone G., Oku T. Descriptions of Japanese Coleophoridae IV. Tyo to Ga, 1990, 41 (3): 155~169
- 8 Falkovitsh M.I. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 364. Neue Arten der Familie Coleophoridae (Lepidoptera), II. Insects of Mongolia, 1976, 4: 370~380
- 9 Jäck E. Eine weitere in Deutschland an *Aster linosyris* (L.) Bernh. lebende *Coleophora*-Art (Lep. Coleophoridae). Dt. ent. z. (N. F.), 1957, 4: 54~60
- 10 Toll S. Studien über die Genitalien einiger Coleophoriden. Z. wien ent. Ges., 1942, 27: 78~84
- 11 Toll S. Rodzina Eupistidae (Coleophoridae) Polski. Docum. Physiogr. Polon., 1953, 32: 1~292, 38pls
- 12 Toll S. Studies on species of the family Coleophoridae. II. Bull. Ent. Pologne, 1954, 24 (4): 139~145
- 13 Tool S. Studien über die Genitalien einiger Coleophoridae. XV. Acta zool. Cracov., 1959, 4 (3): 121~145
- 14 Tool S. Studien über die Genitalien einiger Coleophoridae. XVI. Acta zool. Cracov., 1960, 5 (7): 249~309
- 15 Toll S., Arnsel H G. Coleophoriden aus Afghanistan (Lepidoptera: Coleophoridae), Beitr. naturk. Forsch. SW-Deutschl., 1967, 26 (3): 5~16

中国鞘蛾研究（鳞翅目：鞘蛾科）：脉鞘蛾组研究及三新种记述^{*}

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摘要 报道了鞘蛾科 (Coleophoridae) 脉鞘蛾组 (*Coleophora follicularis* group) 5 个分布于中国的种，其中有 3 个新种和 2 个中国新记录种：矛尖脉鞘蛾（新种）*Coleophora jaculatoria* sp. nov. 分布于陕西（周至）；奇脉鞘蛾 *Coleophora frankii* Schmidt 新记录于新疆（巩留），国外分布奥地利，捷克，斯洛伐克，匈牙利，南斯拉夫，德国和意大利；隐脉鞘蛾 *Coleophora pseudociconiella* Toll 新记录于新疆（塔城），国外分布奥地利，意大利，捷克和土耳其；四叉脉鞘蛾（新种）*Coleophora quadrifurca* sp. nov. 分布陕西（杨陵、澄城）；榆中脉鞘蛾（新种）*Coleophora yuzhongensis* sp. nov. 分布甘肃（榆中）。文中提供了分种检索表和新种的外生殖器特征图。模式标本保存在南开大学生物系。

关键词 鳞翅目，鞘蛾科，脉鞘蛾组，新种，中国

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